

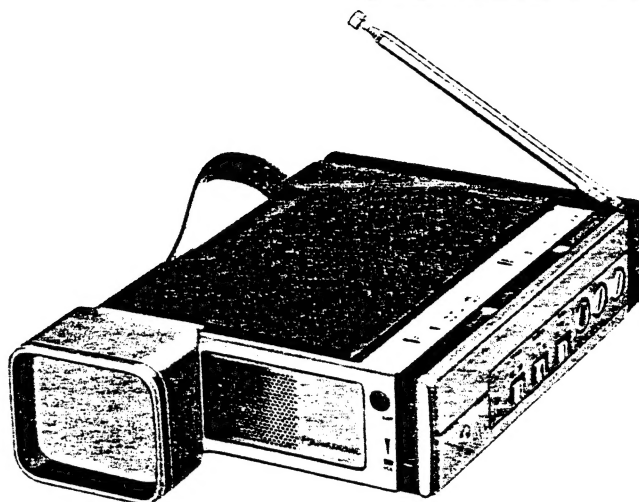
# Service Manual

Black and White Television with Radio

## TR-1000P

### Chassis

### No. 1E01-A



The service technician is required to read and follow the "Safety Precautions" and "Important Safety Notice" in this service manual.

#### Specifications:

##### Television

Power Source: AC: 120V, 60Hz. DC: 6V  
Power Consumption: AC: 4.9W. DC: 1.8W  
Antenna Impedance: UHF/VHF FM Monopole  
Antenna. 75 $\Omega$ , Unbalanced type.  
UHF/VHF/FM External  
Antenna. 75 $\Omega$ , Unbalanced type.  
Receiving Channel: U.S.A. CCIR B&G U.K.  
VHF: 2-13 2-12 —  
UHF: 14-83 21-69 21-69  
Intermediate  
Frequency: Video: 38.9MHz  
Sound: 34.4MHz (USA Standard)  
33.4MHz (CCIR Standard)  
32.9MHz (UK Standard)  
Integrated Circuits: 10 IC's  
Semiconductor: 18 Transistors  
(With Radio) 37 Diodes  
1 Thermistor

##### Nominal Anode

Voltage: 5.3KV (Zero Beam Current)  
Picture Tube: 40CB4 1.5" 36° Deflection  
Speaker: 1- $\frac{1}{8}$  inches, 16 $\Omega$ , Round type.  
Automatic Circuit: Peak Automatic Gain Control  
Saw-Tooth Automatic Frequency  
Control  
Automatic Voltage Regulator  
Dimensions: Height: 1- $\frac{1}{2}$  inches (40mm)  
Width: 5- $\frac{5}{16}$  inches (135mm)  
Depth: 6- $\frac{9}{16}$  inches (166mm)  
Weight: 1.8 lbs. (0.83kg)

##### Radio

Radio Frequency  
Range: AM: 525-1605kHz  
FM: 88-108MHz  
Audio Output: 0.1W

Specifications are subject to change without notice.

# Panasonic®

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Carolina, Puerto Rico 00630  
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## SAFETY PRECAUTIONS

### GENERAL GUIDELINES

1. It is advisable to insert an isolation transformer between the television set and the AC power line before servicing the chassis.
2. In servicing, pay attention to the original lead dress, especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result the short circuit.
3. After servicing, observe that all the protective devices such as insulation barriers, insulation papers, shields, isolation and R-C combinations, are properly installed.
4. Before turning the receiver on, check the resistance between the B+ line and chassis ground. Connect  $\ominus$  side of an ohmmeter to B+ line and  $\oplus$  side to ground. Each line should have more resistance than specified below.

B+ line	Minimum Resistance
6V	35 $\Omega$

5. When the TV set will not be used for a long period of time, unplug the power cord from the AC line outlet.
6. Potentials as high as 5.3kV are present when this receiver is operating. Operation of the receiver without the rear cover on involves danger of shock.

Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment. Always discharge the anode of the picture tube to the receiver chassis before handling the tube.

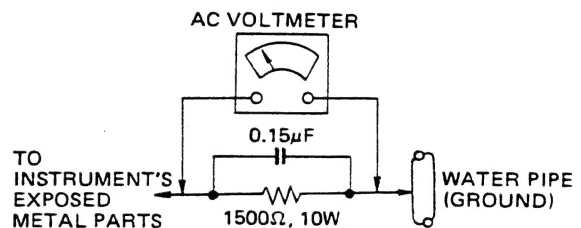
7. After servicing make the following leakage current check to prevent the customer from undergoing shock hazard.

### LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Turn the receiver power switch on.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part such as screwheads, antennas, control shafts, handle bracket, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm to 4 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity.
4. Remove the jumper from the AC plug.

### LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.
2. Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15 $\mu$ F capacitor between each exposed metallic part and a good ground like a water pipe as shown in Figure.
3. Use an AC voltmeter with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Move the resistor connection to each exposed metallic part and measure the voltage.
5. Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.
6. The potential must not exceed 0.75 volt RMS, from any exposed metal part to ground. In case any of the measurements are not within the limits specified, there is a possibility of a shock hazard and the receiver should be repaired and rechecked before it is returned to the customer.



### X-RADIATION

**WARNING:** The potential source of X-Radiation in TV sets is the picture tube.

**NOTE:** It is important to use an accurate, periodically calibrated, high voltage meter.

1. Turn the Brightness control fully counterclockwise.
2. Measure the High Voltage. The high voltage meter should indicate a nominal 5.3 kV and the maximum 6.0 kV. If the upper meter indication exceeds the maximum level, immediate service is required to prevent the possibility of premature component failure.
3. To prevent a possibility of x-radiation, it is essential to use the specified picture tube.

## IMPORTANT SAFETY NOTICE

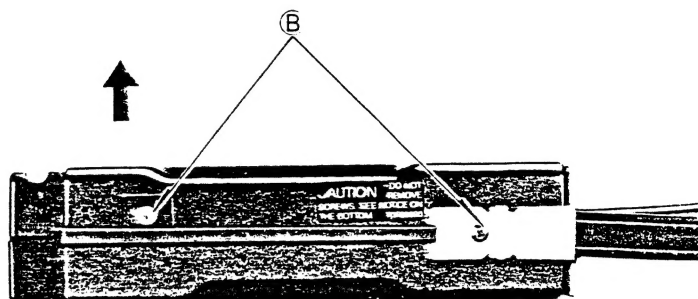
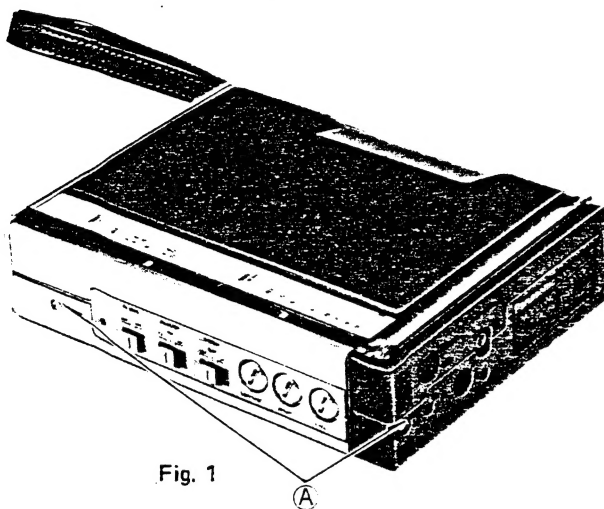
There are special components used in Panasonic TV sets which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of Matsushita Electric.

The electrical parts used in this model-such as the resistors, the capacitors and the transistors, are smaller than the same parts used in conventional models. Very painstaking and careful servicing techniques, therefore, are necessary for this model.

## DISASSEMBLY INSTRUCTIONS

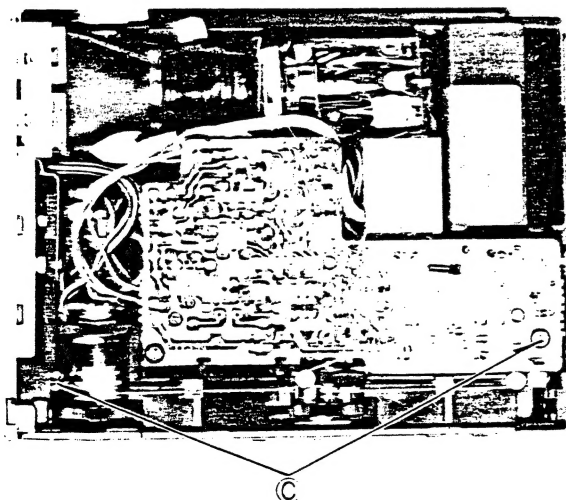
### UPPER CABINET REMOVAL

1. Remove 2 screws (A) and 2 screws (B) as shown in Fig. 1, 2.
2. Lift up upper cabinet as shown the arrow in Fig. 2.



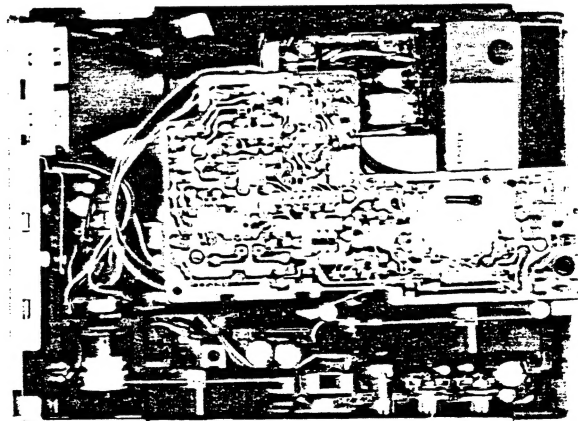
### RADIO BLOCK REMOVAL

1. Remove 2 screws (C) as shown in Fig. 3.



### ESCUTCHEON BLOCK REMOVAL

1. Pull the escutcheon block out of the cabinet.



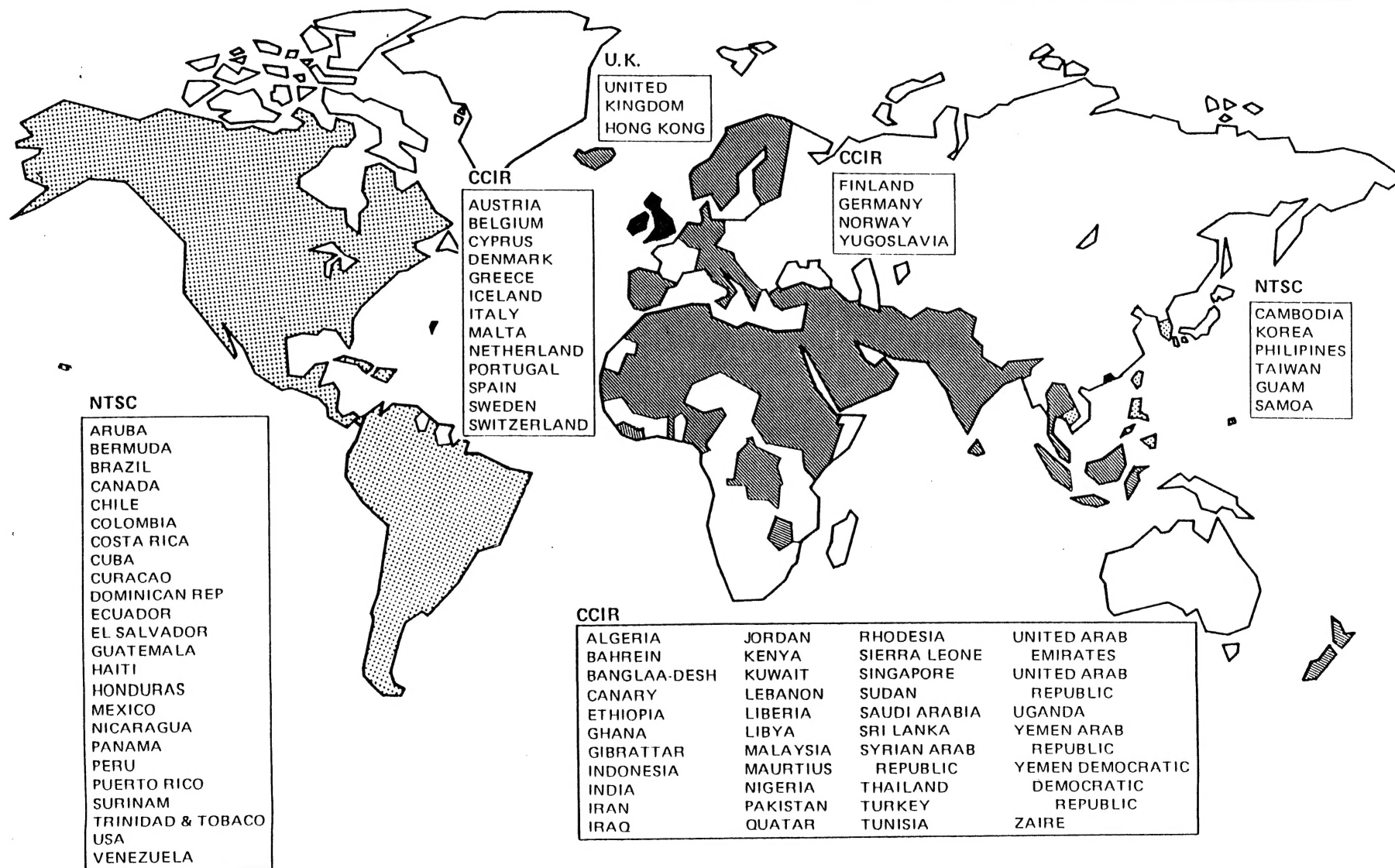
# MAIN RECEPTION AREAS

## Broadcasting system VS Area

Area	Broadcasting	Selector position
.....	NTSC (USA) standard	USA
.....	CCIR B & G standard	EUR
.....	U.K. standard	U.K.

## Frequency Range

	VHF	UHF	AM	FM
USA	54-88 MHz 174-216 MHz	470-890 MHz	525-1605 kHz	88-108 MHz
EUR	47-68 MHz 174-230 MHz	470-862 MHz	525-1605 kHz	88-108 MHz
U.K.	—	470-862 MHz	525-1605 kHz	88-108 MHz



# DIAL STRINGING

## TV BLOCK

1. Turn the TV tuning shaft fully clockwise.
2. Follow steps ① to ③ for correct stringing.
3. Wind the dial string to the tention roller (A) several turns, then turn the tention roller (B) counterclockwise seven times for getting appropriate tention.
4. Fix the dial string on the Tention roller (A) and TV pulley with bond.
5. Insert the tention roller (B) to groove on the TV bracket as shown in Fig. 9.
6. Mount the TV tuning knob and turn it fully counterclockwise.
7. Mount the TV Dial pointer at the start point on the TV bracket as shown in Fig. 10.
8. Fix the TV dial pointer on the string with bond as shown in Fig. 11.

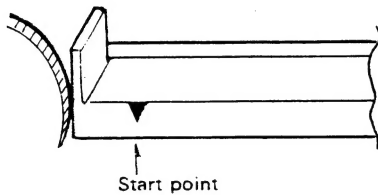


Fig. 10

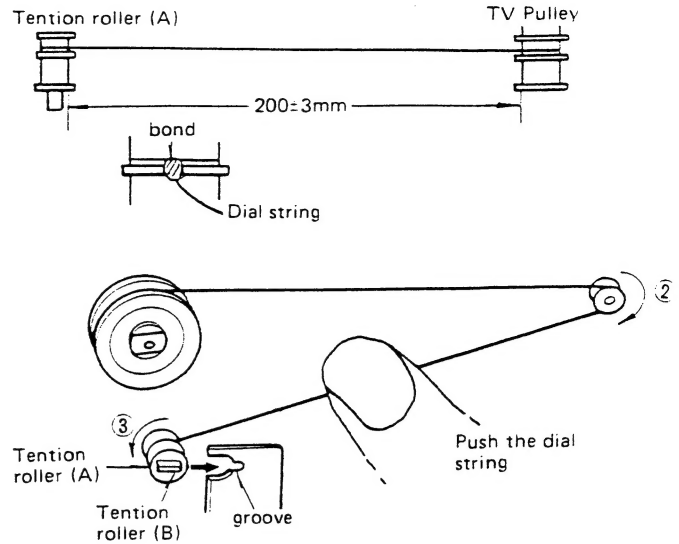


Fig. 9

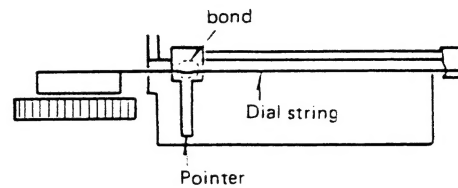
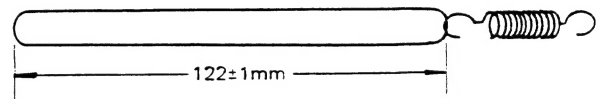


Fig. 11



## RADIO BLOCK

1. Turn the pulley fully clockwise.
2. Follow the steps ① to ⑥ for correct stringing as shown in Fig. 12.
3. Mount the Radio tuning knob and turn it fully counterclockwise.
4. Mount the Radio Dial pointer at the start point on the Radio bracket as shown in Fig. 13.
5. Fix the Radio dial pointer on the string with bond as shown in Fig. 14.

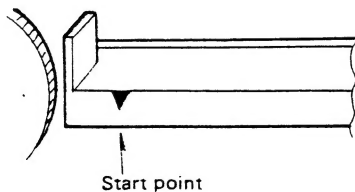


Fig. 13

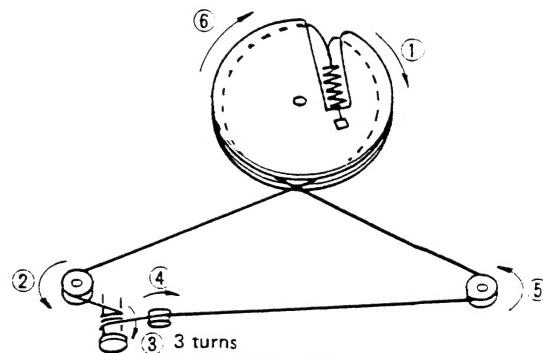


Fig. 12

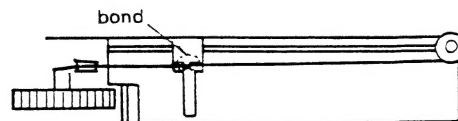


Fig. 14

## FIELD ALIGNMENT OF TV

### AVR (AUTOMATIC VOLTAGE REGULATOR)

Connect a voltmeter across TP91 and chassis. Make certain the B+ supply voltage is  $+4.8V \pm 0.05V$ . Adjust the AVR control VR71 if necessary.

### YOKE POSITION

The yoke is secured to the neck of the picture tube with an angular clamp and screw. To Adjust the yoke and correct for picture tilt : Loosen the clamp screw, correct tilt, and retighten the clamp screw.

### CENTERING

The picture centering device consists of two rings located at the rear of the yoke assembly. Each ring has a tab for ease of adjustment.

The tabs should be rotated and moved towards or away from each other until the picture is properly centered on the picture tube screen.

### TO ADJUST THE R-F AGC PROPERLY

1. Tune in strong local station.
2. Turn the R-F AGC control VR19 fully counter-clockwise.
3. Observe the input signal, turn the R-F AGC control VR19 clockwise to the point where the snow noise disappears in the picture.
4. Check the reception with all channels. If the set does not get, clear picture on all channels, readjust the R-F AGC. (Assuming, that all channels have sufficient signal strength and are essentially free from interference.)

### VERTICAL HEIGHT

Adjust the V-Height control VR32 until picture becomes symmetrical from top to bottom.

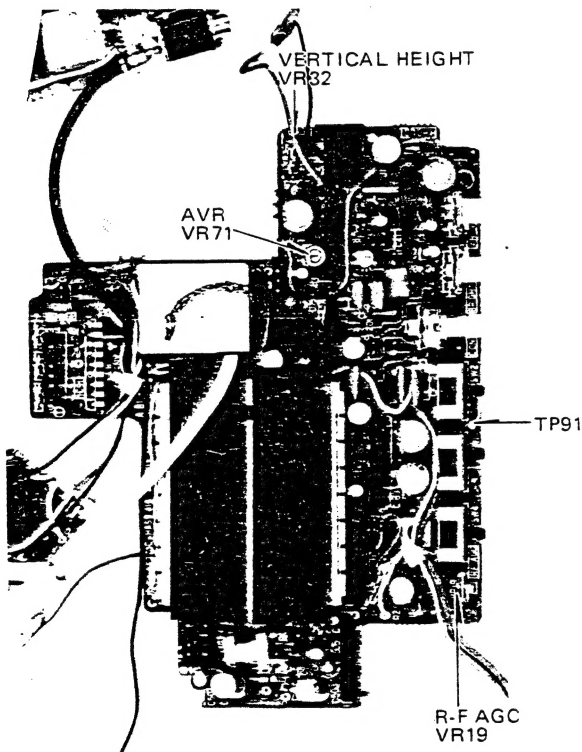


Fig. 15

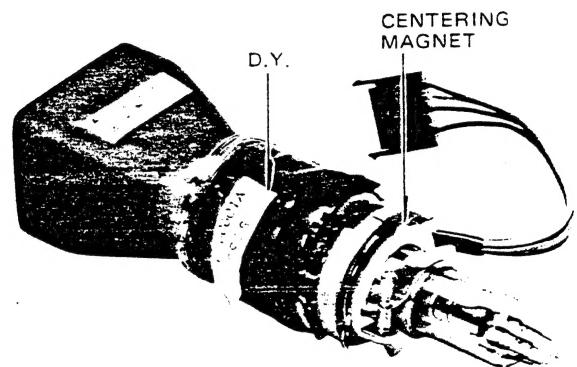


Fig. 16

# TELEVISION INDICATOR ALIGNMENT

## TELEVISION INDICATOR ALIGNMENT

1. Set the function selector to TV position and set the band selector to UHF position.
2. Set the system switch to USA position.
3. Set the pointer to the station of which is the lowest receivable channel in your area.
4. Adjust VR92 to get the best picture.
5. Set the pointer to the station of which is the highest receivable channel in your area.
6. Adjust VR93 to get the best picture.
7. Set the pointer same as step 3.
8. Readjust VR92 if necessary.
9. Set the band selector to VHF position.
10. Set the pointer to the station of which is the lowest receivable channel in your area.
11. Adjust the VR94 to get the best picture.
12. Set the pointer to the station of which is the highest receivable channel in your area.
13. Adjust the VR96 to get the best picture.

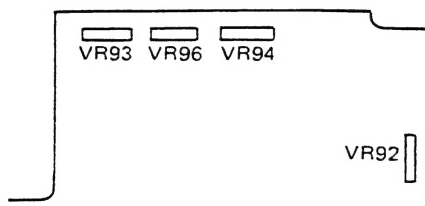


Fig. 17

## GENERAL ALIGNMENT

- Note:**
1. During alignment, use a non-metallic screwdriver to prevent an unexpected short-circuit.
  2. The transformer core which has two tuning peak points. Adjust at the lower position as shown in Fig. 18.

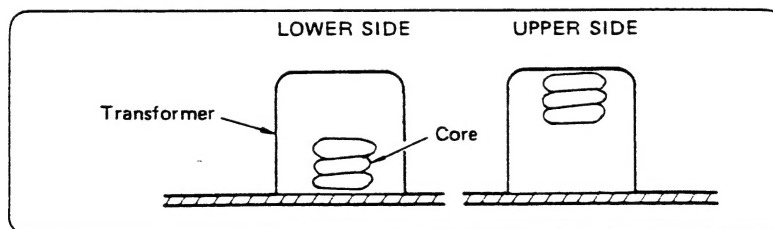


Fig. 18

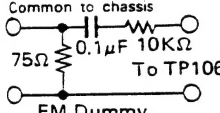

# ALIGNMENT OF RADIO

**AM I-F & R-F ALIGNMENT** (Equipment Required: Signal Generator, 16 ohm speaker or dummy load, output meter.)

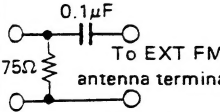
Output of signal generator should be no higher than necessary to obtain an output reading. Set Volume control to maximum. Maintain line voltage at 120 volts. Set selector to AM <b>Note:</b> Adjustment controls are shown in Figure 19.					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT	ADJUST	REMARKS
1 Fashion loop of several turns of wire and radiate signal into loop of receiver.  2  3	455 kHz (30% Mod. with 400 Hz)	Point of non-interference (on/about 600 kHz).	Output meter across earphone jack.	L1110 L1111	Adjust for maximum output. Repeat steps (2) and (3).
	600 kHz (30% Mod. with 400 Hz)	Marked 600 kHz		L1101 (OSC coil) L1100 (ANT coil)	
	1400 kHz (30% Mod. with 400 Hz)	Marked 1400 kHz		(O) (OSC trimmer) (A) (ANT trimmer)	

**Note:** 1. Cement antenna coil with wax after completing alignment.  
2. Make certain that speaker or dummy resistor (16  $\Omega$ ) is connected to the earphone jack when aligning.

## FM I-F ALIGNMENT

<b>EQUIPMENT REQUIRED</b> Signal generator that provides 10.7 MHz marker. Sweep generator that provides 10.7 MHz and 400 kHz sweep width.  <b>OSCILLOSCOPE</b> Set sweep selector of oscilloscope to EXTERNAL SWEEP. Apply 60 Hz sweep signal from sweep generator to horizontal input terminals of oscilloscope. Set selector to FM. Set Volume control to minimum. Maintain line voltage at 120 volts. <b>Note:</b> Adjustment controls are shown in Figure 19.						
SWEEP GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT	ADJUST	WAVE FORM	REMARKS
1 Connect to TP102 through FM DUMMY. Common to chassis.  2	10.7 MHz	Point of non-interference (on/about 90 MHz).	Connect vert. amp of scope to TP103. Common to chassis.	L1006 L1007	 10.7MHz	Adjust for maximum amplitude and proper linearity.
				L1008		Adjust for proper linearity.

## FM R-F ALIGNMENT (Equipment Required: Signal Generator)

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT	ADJUST	REMARKS
3 Connect to EXT FM antenna terminal through FM dummy antenna. Common to chassis.  4	90 MHz (30% Mod. with 400 Hz)	Marked 90 MHz	Output meter across EXT SP jack	L1005 (FM OSC coil) L1004 (FM collector coil)	Adjust for maximum output. Repeat step (3) and (4).
	106 MHz (30% Mod. with 400 Hz)	Marked 106 MHz		FC1 (FM OSC trimmer) FC2 (FM collector trimmer)	



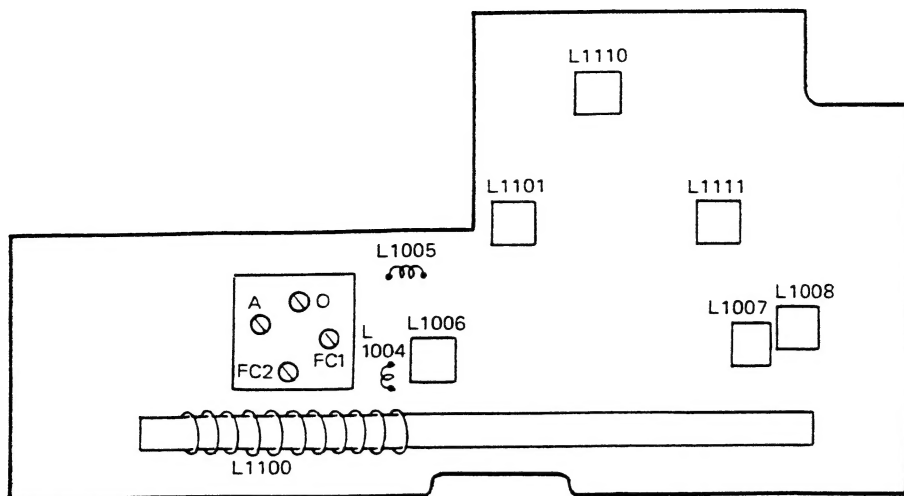


Fig. 19

## IN CIRCUIT RESISTANCE

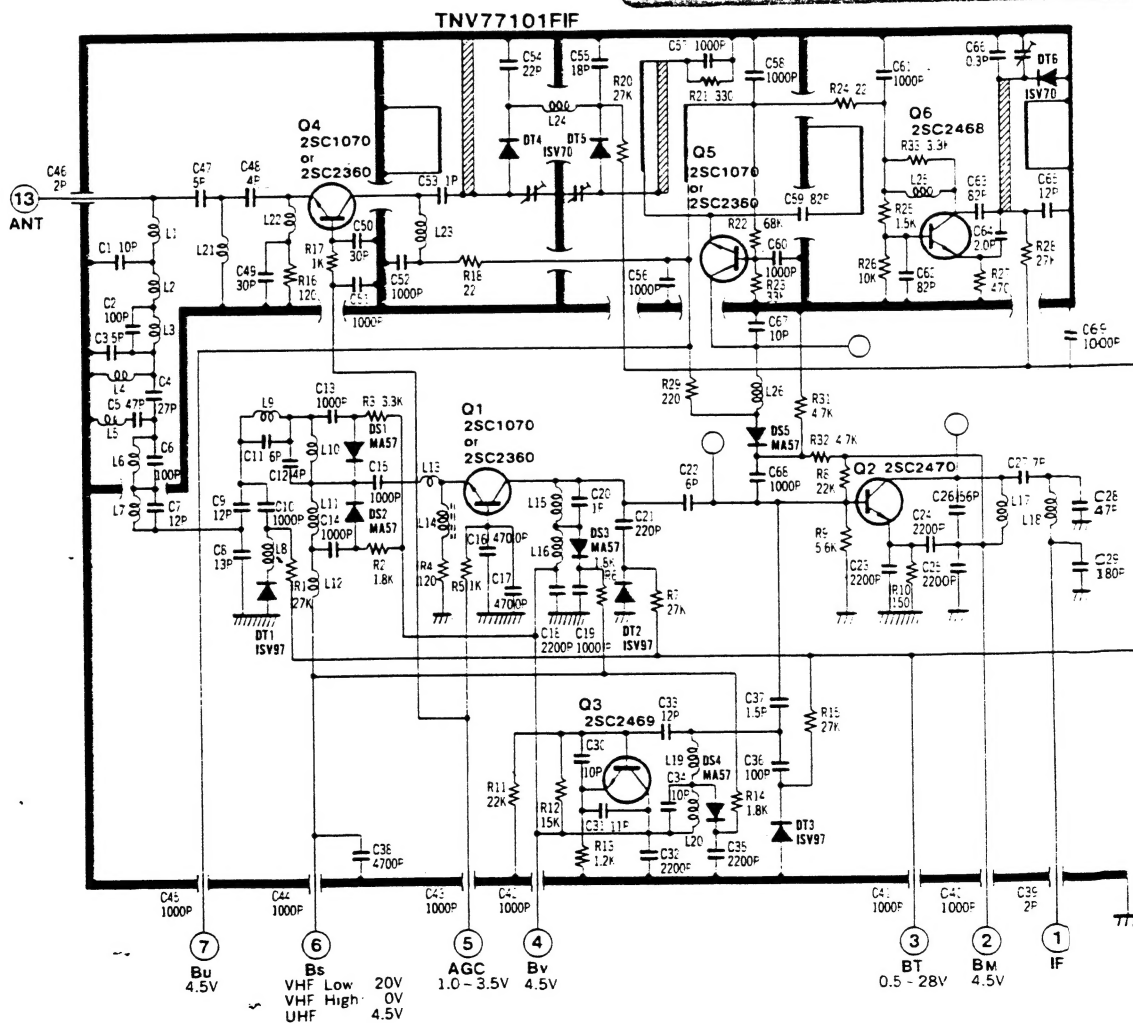
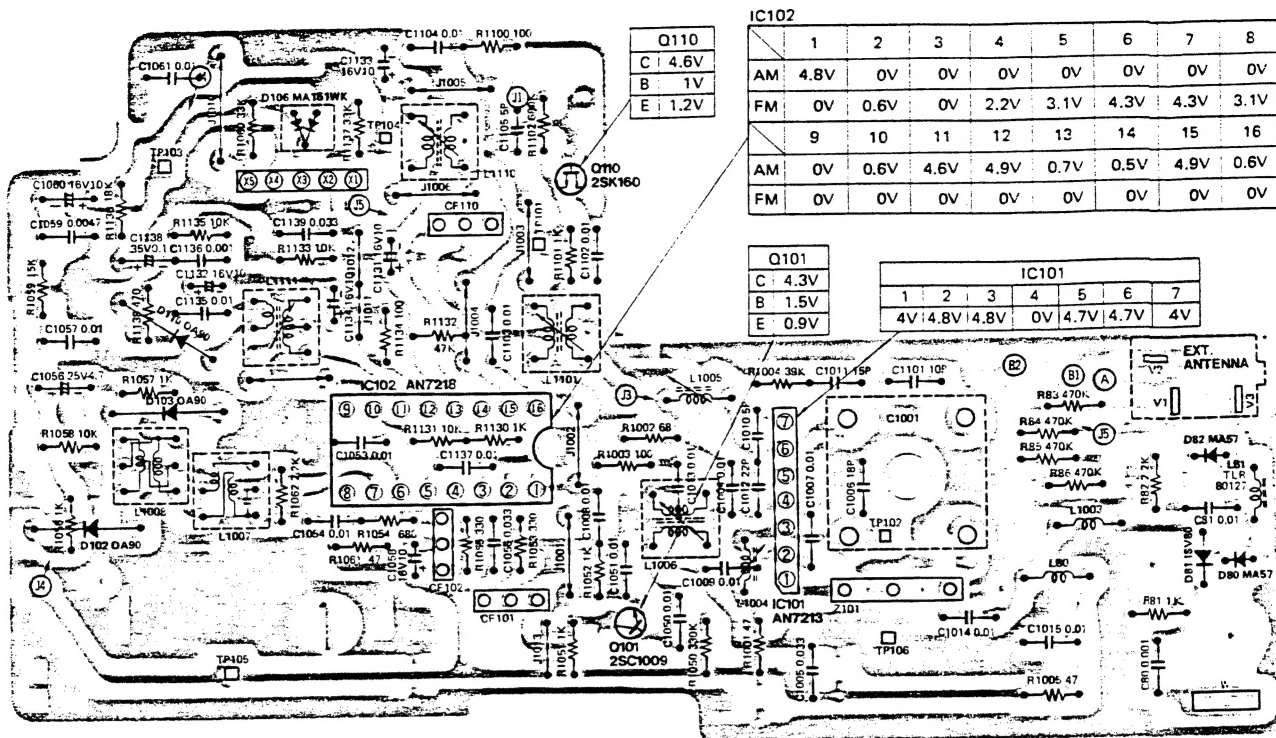
resistor No.	resistance	resistor No.	resistance	resistor No.	resistance	resistor No.	resistance	resistor No.	resistance
<b>TV</b>		R185	1.1K $\Omega$	R360	820 $\Omega$	R703	3K $\Omega$	R1050	330K $\Omega$
R88	16K $\Omega$	R186	330 $\Omega$	R361	56K $\Omega$	R704	470 $\Omega$	R1051	1K $\Omega$
R89	2.2K $\Omega$	R187	1.4K $\Omega$	R401	560 $\Omega$	R705	4.7K $\Omega$	R1052	1K $\Omega$
R90	16K $\Omega$	R188	4.5K $\Omega$	R402	39 $\Omega$	R706	680 $\Omega$	R1053	330 $\Omega$
R91	6.8K $\Omega$	R201	100 $\Omega$	R403	10K $\Omega$	R707	10 $\Omega$	R1054	360 $\Omega$
R92	1K $\Omega$	R202	5.6K $\Omega$	R404	2.2K $\Omega$	R710	50 $\Omega$	R1055	330 $\Omega$
R93	255K $\Omega$	R203	5.6K $\Omega$	R405	27K $\Omega$	R711	50 $\Omega$	R1056	1K $\Omega$
R94	22K $\Omega$	R204	5.6K $\Omega$	R406	47 $\Omega$	R712	50 $\Omega$	R1057	1K $\Omega$
R95	8.2K $\Omega$	R206	12K $\Omega$	R407	2.7K $\Omega$	R713	50 $\Omega$	R1058	10K $\Omega$
R96	1M $\Omega$			R408	470 $\Omega$	R714	50 $\Omega$	R1059	39 $\Omega$
R97	10K $\Omega$	R207	12K $\Omega$	R409	140K $\Omega$	R715	50 $\Omega$	R1060	33K $\Omega$
R98	10K $\Omega$	R208	12K $\Omega$	R440	3.9K $\Omega$	R716	50 $\Omega$	R1061	43 $\Omega$
R99	10K $\Omega$	R212	2.7K $\Omega$	R441	250K $\Omega$	R717	50 $\Omega$	R1062	0 $\Omega$
R101	56 $\Omega$	R213	31 $\Omega$	R442	330K $\Omega$	<b>RADIO</b>		R1100	100 $\Omega$
R111	0 $\Omega$	R301	15K $\Omega$	R443	1M $\Omega$			R1101	620 $\Omega$
R141	20K $\Omega$	R302	18K $\Omega$	R444	4.7K $\Omega$	R81	1K $\Omega$	R1102	680K $\Omega$
R142	10K $\Omega$	R303	48K $\Omega$	R445	1K $\Omega$	R82	2.2K $\Omega$	R1130	1K $\Omega$
R143	10K $\Omega$	R304	60K $\Omega$	R502	68 $\Omega$	R83	7.5K $\Omega$	R1131	10K $\Omega$
R144	1K $\Omega$	R305	15K $\Omega$	R504	1.8K $\Omega$	R84	7.5K $\Omega$	R1132	11K $\Omega$
R145	330 $\Omega$	R306	3.9K $\Omega$	R505	47K $\Omega$	R85	7.5K $\Omega$	R1133	8.5K $\Omega$
R180	1.2K $\Omega$			R601	1M $\Omega$	R86	7.5K $\Omega$		
R181	17K $\Omega$	R307	3K $\Omega$	R602	1.5K $\Omega$	R1001	47 $\Omega$	R1134	100 $\Omega$
R182	23K $\Omega$	R308	6.8K $\Omega$	R614	2.2M $\Omega$	R1002	68 $\Omega$	R1135	4K $\Omega$
R183	14K $\Omega$	R309	3.5K $\Omega$	R615	1M $\Omega$	R1003	100 $\Omega$	R1136	18K $\Omega$
R184	1K $\Omega$	R310	2.7 $\Omega$	R701	390 $\Omega$	R1004	39K $\Omega$	R1137	33K $\Omega$
		R313	22 $\Omega$	R702	3.5K $\Omega$	R1005	47 $\Omega$	R1138	470 $\Omega$

**Note:** 1. Set power switch to OFF position.

2. When measure the resister on the solder circuit board by ohm meter, it indicates difference value depend on the polarity. In this cae should be read high resistance value.

# CONDUCTOR VIEWS

## RADIO BOARD TNP82983-21



MAIN BOARD TNP81873-21H  
PICTURE TUBE SOCKET TNP81873HIZ

IC91

	1	2	3	4	5	6	7	8	9
V.Low	30V	22V		4.5V	0V	0V	24V	30V	31V
V.High	30V	0V		4.5V	0V	3.5V	8.5V	0V	31V
U	0V	11.5V		10V	0V	0V	11.5V	0V	31V

IC91 ③ terminal

	2	3	4	5	6	7	9	10	13
VHF	4V	5.5V	9V	13V	17.6V	8.5V	9.8V	11.5V	13.3V

	14	30	50	70	83
UHF	1V	5V	9V	14V	24V

	1	4V	5	4.5V
IC21	2	1.5V	6	1.3V
	3	1.5V	7	1.3V
	4	0V		

	1	4.8V
Q73	2	7.4V
	3	8V
	4	0V

	1	4.6V
Q44	2	0.2V
	3	0V
	4	0V

	V.L.	V.H.	U
Q91	C 24V	8.5V	30V
	B 2.3V	0V	0V
	E 4V	2.2V	2.2V

	V.L.	V.H.	U
Q14	C 28V		
	B 2V		
	E 1.4V		

	V.L.	V.H.	U
Q72	C 10.6V		
	B 6.2V		
	E 6.8V		

	V.L.	V.H.	U
Q71	C 6.2V		
	B 2.4V		
	E 2V		

	V.L.	V.H.	U
Q92	C 23.5V	0V	0V
	B 0V	0.6V	0V
	E 0V	0V	0V

Part No.	Indication	Part No.	Indication
2SB709	A	MA151K	MH
2SB709A	B	MA152K	MI
2SD601	Y	MA151WK	MT
2SD601A	Z	MA57	MX
2SD814	P	MA151A	MA
2SC1009	F	MA152A	MB
2SK160	K	MA151WA	MN

mark is rank

	V.L.	V.H.	U
Q74	C 8V		
	B 6.7V		
	E 6V		

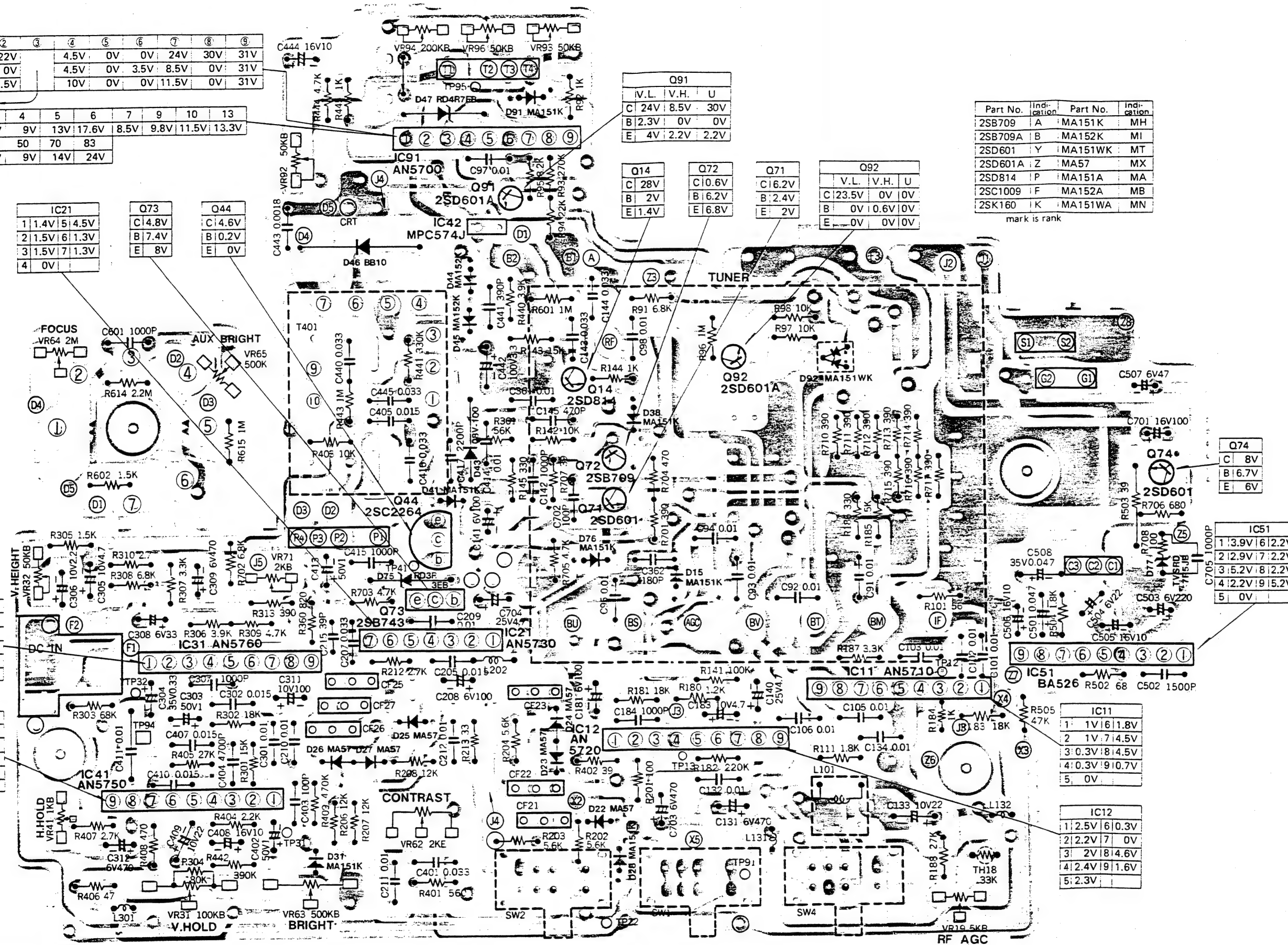
	1	3.9V	6	2.2V
IC51	2	2.9V	7	2.2V
	3	5.2V	8	2.2V
	4	2.2V	9	5.2V
	5	0V		

	1	1V	6	1.8V
IC11	2	1V	7	4.5V
	3	0.3V	8	4.5V
	4	0.3V	9	0.7V
	5	0V		

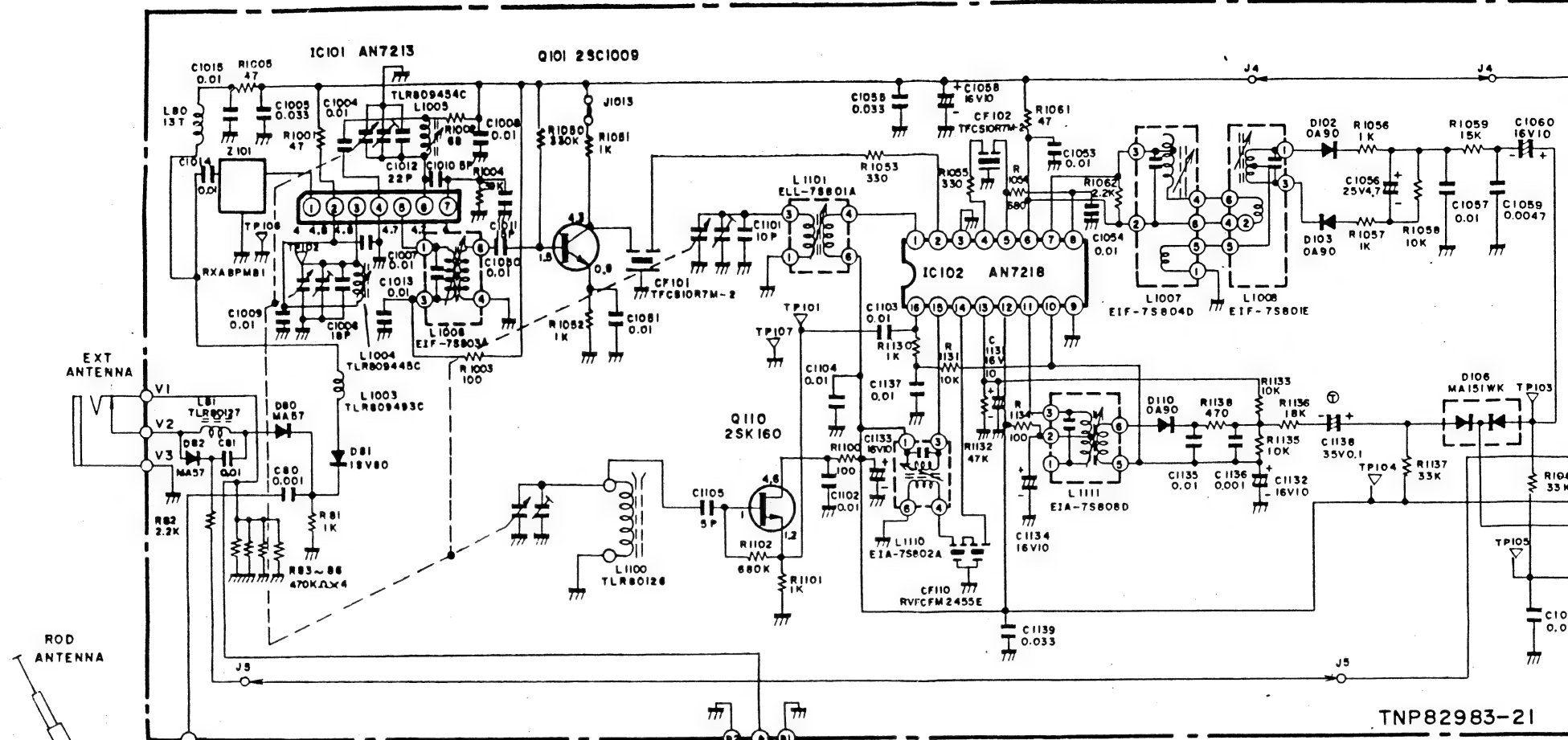
	1	2.5V	6	0.3V
IC12	2	2.2V	7	0V
	3	2V	8	4.6V
	4	2.4V	9	1.6V
	5	2.3V		

	1	2V	6	2V
IC31	2	1.8V	7	4V
	3	1.2V	8	4.6V
	4	0.8V	9	1.4V
	5	0V		

	1	2V	6	2V
IC41	2	1.8V	7	4V
	3	1.2V	8	4.6V
	4	0.8V	9	1.5V
	5	0V		



SCHEMATIC DIAGRAM FOR MODEL



IC102

	1	2	3	4	5	6	7	8
AM	4.8V	0V	0V	0V	0V	0V	0V	0V
FM	0V	0.6V	0V	2.2V	3.1V	4.3V	4.3V	3.1V
	9	10	11	12	13	14	15	16
AM	0V	0.6V	4.6V	4.9V	0.7V	0.5V	4.9V	0.6V
FM	0V	0V	0V	0V	0V	0V	0V	0V

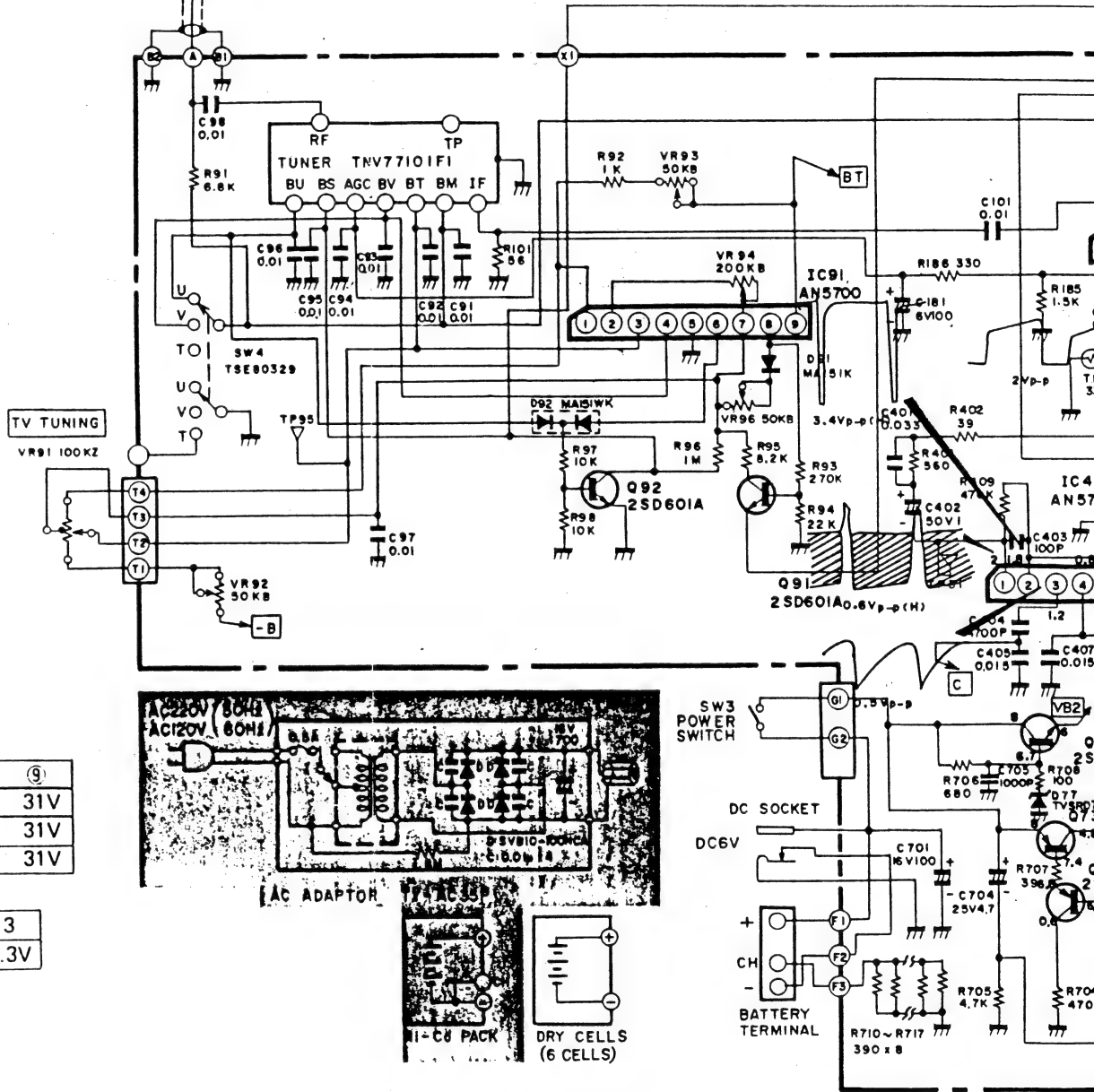
	Q91			Q92		
	V.L.	V.H.	U	V.L.	V.H.	U
C	24V	8.5V	30V	23.5V	0V	0V
B	2.3V	0V	0V	0V	0.6V	0V
E	4V	2.2V	2.2V	0V	0V	0V

IC91

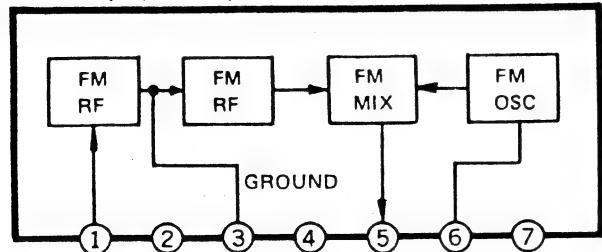
	①	②	③	④	⑤	⑥	⑦	⑧	⑨
V.Low	30V	22V		4.5V	0V	0V	24V	30V	31V
V.High	30V	0V		4.5V	0V	3.5V	8.5V	0V	31V
U	0V	11.5V		10V	0V	0V	11.5V	0V	31V

IC91 ③ terminal

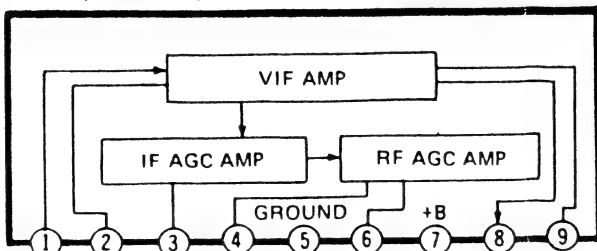
	2	3	4	5	6	7	9	10	13
VHF	4V	5.5V	9V	13V	17.6V	8.5V	9.8V	11.5V	13.3V
UHF	14	30	50	70	83				
	1V	5V	9V	14V	24V				



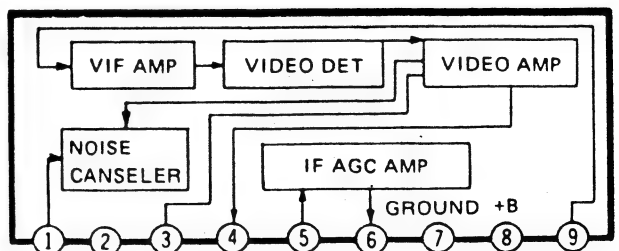
IC101 (AN7213)



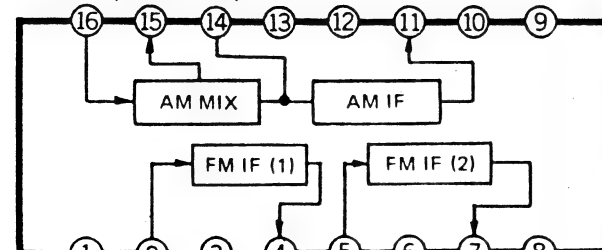
IC11 (AN5710)



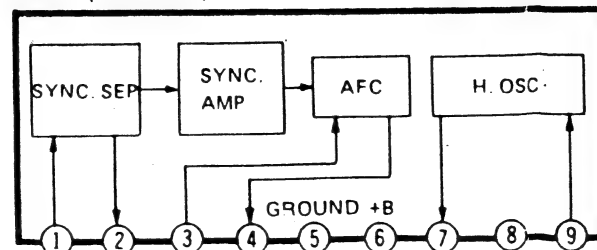
IC12 (AN5720)



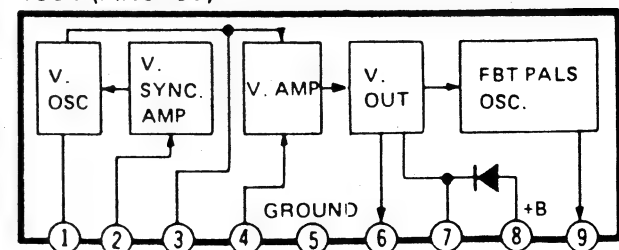
IC102 (AN7218)



IC41 (AN5750)



IC31 (AN5760)





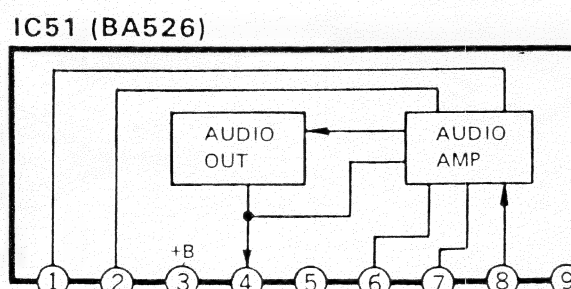
## IMPORTANT SAFETY NOTICE



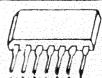
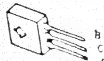
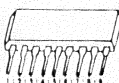

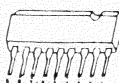
IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMMUNE TO X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT THE SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

TNP82983-21

TNP81873-21H



SEMICONDUCTOR BASE INFORMATION			
	2SB 709 2SC1009 2SD601A 2SD814 2SK160		AN7218
	AN5730 AN7213		2SB743
	AN5700 AN5710 AN5720 AN5750 AN5760		2SC226A
	TVSBA526		

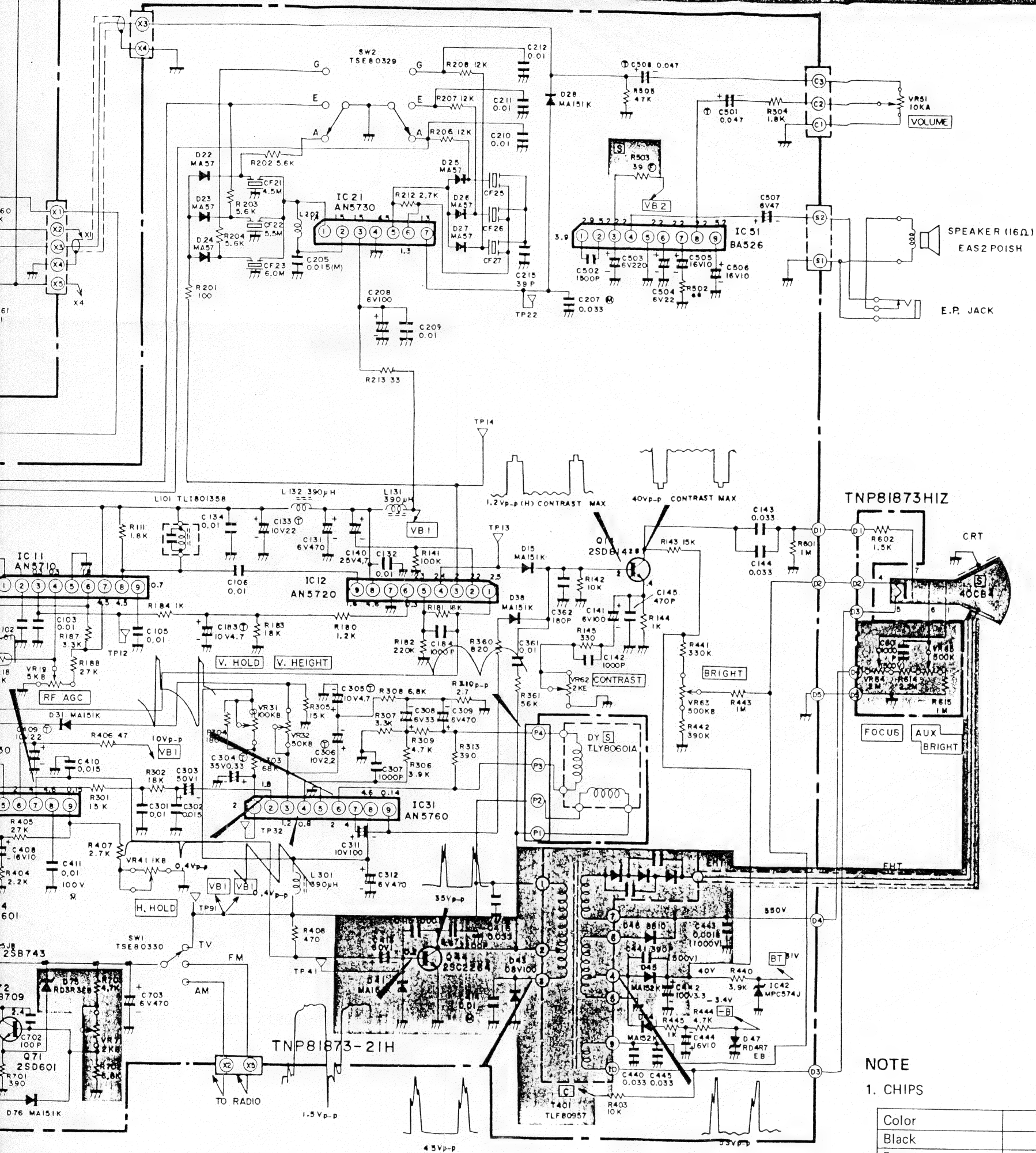
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# TR-1000P (Chassis Model No. 1E01-A) (Chassis Family No. 1E01)

## IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.



## NOTE

### 1. CHIPS

Color	Original Parts Name
Black	Chip Resistor
Brown	Chip Capacitor
Blue	Chip Jumper

### 2. RESISTOR

All resistors are carbon 1/4W resistor, unless otherwise noted the following marks.  
Unit of resistance is OHM ( $\Omega$ ). (K=1,000, M=1,000,000)  
Ⓢ: Non Flame resistor

### 3. CAPACITOR

All capacitors are ceramic 50V capacitor, unless otherwise noted the following marks.  
Unit of capacitance is  $\mu F$ , unless otherwise noted.  
Ⓜ: Polyester capacitor Ⓢ: Polystyrene capacitor  
Ⓢ: Electrolytic capacitor Ⓢ: Tantal Electrolytic capacitor.

### 4. COIL

Unit of inductance is  $\mu H$ .

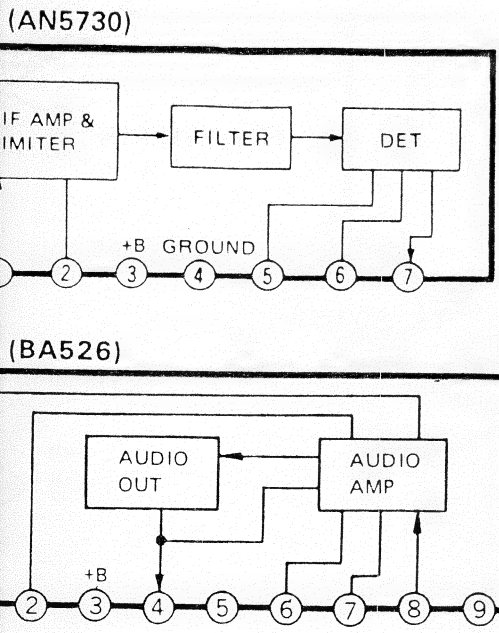
### 5. TEST POINT

T.P. Ⓢ: Test point-position.

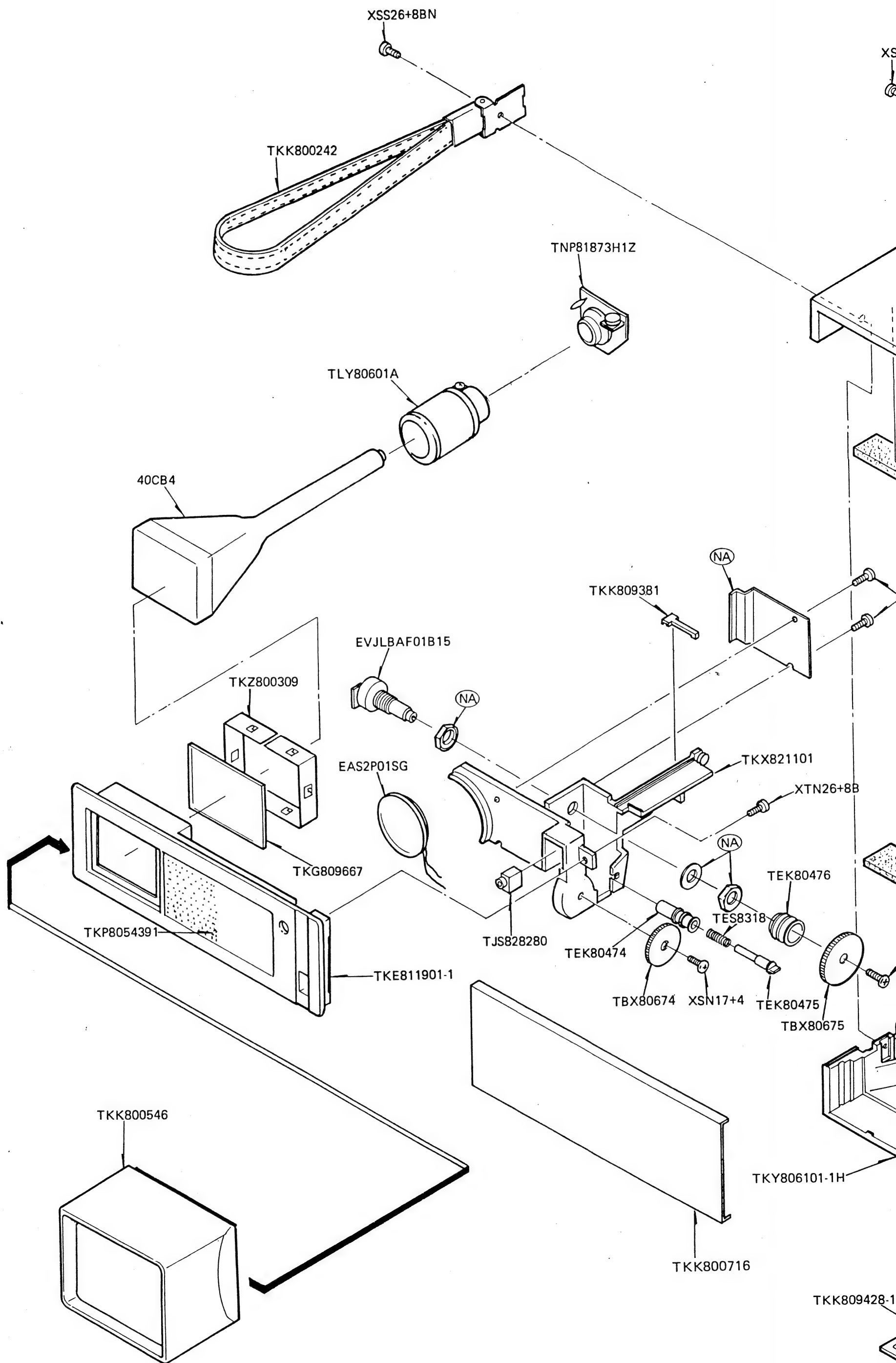
### 6. VOLTAGE MEASUREMENT

Voltage is measured by a volt ohm meter with DC 20K OHM/V receiving normal signal, when all controls are set to the maximum position.

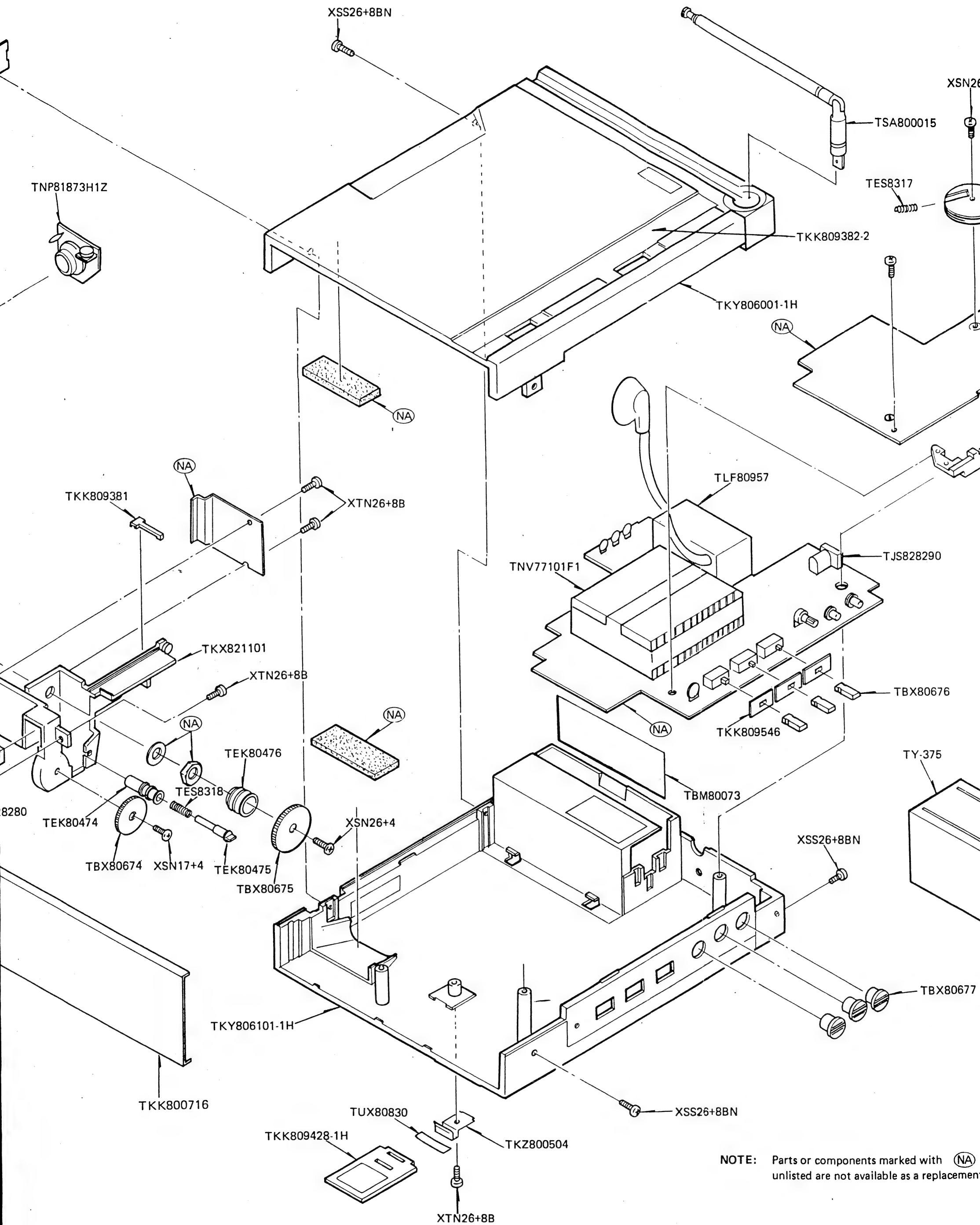
7. When arrow mark (↗) is found, connection is easily found along with the direction of an arrow.  
8. This schematic diagram is the latest at the time of printing and subject to change without notice.



SEMICONDUCTORS BASE INFORMATION			
2SB709 2SC1009 2SD601A 2SD814 2SK160	AN7218	2SB743	2SC2264
AN5730 AN7213	2SB743	2SC2264	TVSBA526
AN5700 AN5710 AN5720 AN5750 AN5760	2SB743	2SC2264	TVSBA526
TVSBA526	2SB743	2SC2264	TVSBA526



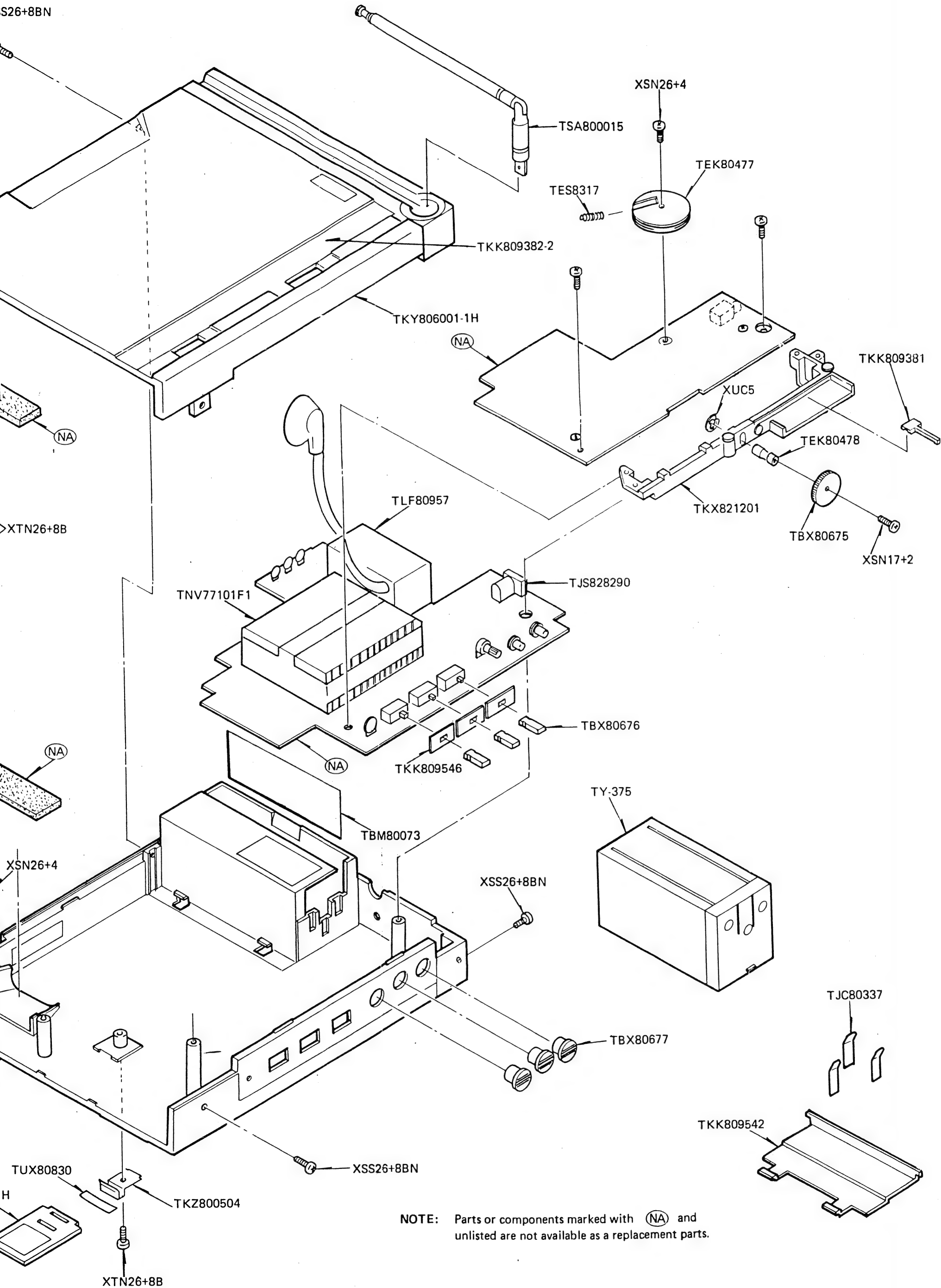
# EXPLODED VIEW





# EXPLODED VIEW

S26+8BN



# REPLACEMENT PARTS LIST

## Important Safety Notice

Components identified by shaded area have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Note: 1. Main board (TNP81873-21H) and radio board (TNP82983-21) are not available as a complete printed circuit board.

The symbol marks (○) on the Replacement Parts List indicate chip parts.

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
<b>CABINET AND MAIN CHASSIS PARTS</b>					
	TKY806001-1H	Upper Cabinet Complete		TXAJT4P132	4-P Mini. Connector Ass'y (Tuning Control)
	TKY806101-1H	Bottom Cabinet Complete		XEH15A2-B1	Earphone
	TKE811901-1	Escutcheon Complete		XSS26+8BN	Cabinet Mounting Screw
	TKG809667	Front Protector (Window)		XSN17+2	Radio Knob Mounting Screw
	TKK800242	Hand Clip		XSN17+4	On-Off Volume Knob Mounting Screw
				XSN26+4	Tuning Knob, Radio Pulley Mounting Screw
	TKK800546	Lens Hood		XTN2+4B	On-Off Switch Control Mounting Screw
	TKK809381	Dial Guide		XTN26+6B	Radio Bracket Mounting Screw
	TKK809382	Dial Indication Plate		XTN26+8B	Set Leg, TV, Bracket Mounting Screw
	TKK809428-1H	Set Leg		XUC5FT	Tuning Shaft Mounting Spring
	TKK809542	Battery Cover		TPG801421	Outer Carton (4 Sets)
	TKK800716	Front Protector			
	TKK809546	Knob Barrier		TPC812771	Outer Carton (1 Set, Color)
	TKP8054391	Speaker Panel		TPC812761	Outer Carton (1 Set)
	TKX821101	TV, Bracket		TXAPD11000P	Filler Complete
	TKX821201	Radio Bracket		TQE8580	Set Cover
	TKZ800309	Picture Tube Bracket		TQB811338	Fun Bag
				TQB810338	Instruction Book
	TKZ800951	Cabinet Mounting Insert Nut			
	TKZ800504	Set Leg Holder		TQB810159	Safety Instruction Sheet
	TUX80830	Set Leg Spring		TQD8118135	Warranty Card
	TBM80073	Model Plate		TKK809382-2	Dial Indication Plate (Europe)
	TBX80674	On-Off Switch, Volume Knob		TKK804902	Accessory Bag
	TBX80675	TV/Radio Tuning Knob	<b>TNP81873H1Z</b>		
	TBX80676	Selector Switch Knob	C601	ECKD2H102KB2	Ceramic Capacitor 1,000PF ±10% 500V
	TBX80677	Control Knob	R614	RRD18XK225	Chip Resistor 2.2MΩ ±10% 1/8W
	TEK80474	Tention Roller (A)	R615	RRD18XK105	Chip Resistor 1MΩ ±10% 1/8W
	TEK80475	Tention Roller (B)	VR64	EVTK0CA00B26	Focus Control 2MΩB
			VR65	EVNK0BA00B55	Aux. Bright. Control 500KΩB
	TEK80476	TV Pulley	R602	RRD18XK152	Chip Resistor 1.5KΩ ±10% 1/8W
	TEK80477	Radio Pulley		TJS825050	Picture Tube Socket
	TEK80478	Tuning Shaft	<b>TNP81873-21H</b>		
	TEK80479	Roller	<b>TUNER</b>		
	TEK80480	Roller Shaft		TNV77101F1	u/v Combo Tuner
			<b>IC</b>		
	TES8317	Radio Coil Spring	IC11	AN5710	V-IF Amp./AGC
	TES8318	TV Coil Spring	IC12	AN5720	V-IF Det./Video Amp.
	40CB4	Picture Tube	IC21	AN5730	S-IF Amp./Det.
	TLY80601A	Deflection Yoke	IC31	AN5760	Vert. OSC./Amp./Output
	TNP81873H1Z	Picture Tube Socket P.C.B. Complete	IC41	AN5750	Sync. Sep. Amp./Horiz. AFC. Osc. Drive
	EAS2P01SH	Speaker	IC42	TVSMP574J	Zener
	TSA800015	Rod Antenna	IC51	TVSBA526	Audio
	TNQ8306	Antenna Matching Box (75Ω-75Ω)	IC91	AN5700	Channel Selection
	TNQ8307	Antenna Matching Box (75Ω-300Ω)	<b>TRANSISTORS</b>		
			Q14	○ 2SD814	Video Output
	TY-AC35P	AC Adaptor Complete	Q44	○ 2SC2264Q	Horiz. Output
VR51	EVLM3BT12A14	On-Off, Volume Control 10KΩA	Q71	○ 2SD601	AVR
VR91	EVJLBAF01B15	Tuning Control 100KΩB	Q72	○ 2SB709	AVR
L1100	TLR80126	AM Bar Antenna	Q73	○ 2SB743	AVR
	TJB80919	Battery Case			
			Q74	○ 2SD601	AVR
	TJS828280	Earphone Socket	Q91	○ 2SD601A	Switching
	TJS898110	Reserve Plug	Q92	○ 2SD601A	Switching
	TXAJT3P301	3-P Mini. Connector Ass'y (Volume Control)			
	TXAJT2P004	2-P Mini. Connector Ass'y (Volume Control)			
	TXAJT2P003	2-P Mini. Connector Ass'y (Earphone Socket)			

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
<b>DIODES</b>			C143	ECUX1H333ZF	Chip 0.033μF ±10% 50V
D15	MA151K	Video	C144	ECUX1H333ZF	Chip 0.033μF ±10% 50V
D22	MA57	Switching	C145	ECUX1H471M-D	Chip 470PF ±20% 50V
D23	MA57	Switching	C181	ECEA0JK101	Electrolytic 100μF 6.3V
D24	MA57	Switching	C183	ECSF1AM475C	Tantalum 4.7μF 10V
D25	MA57	Switching	C184	ECUX1H102MD	Chip 1,000PF ±20% 50V
D26	MA57	Switching	C205	ECUX1H153MD	Chip 0.015μF ±20% 50V
D27	MA57	Switching	C207	ECUX1H333ZF	Chip 0.033μF ±10% 50V
D28	MA151K	Switching	C208	ECEA0JK101	Electrolytic 100μF 6.3V
D31	MA151K	Switching	C209	ECUX1H103ZF	Chip 0.01μF ±10% 50V
D38	MA151K	Blanking	C210	ECUX1H103ZF	Chip 0.01μF ±10% 50V
D41	MA151K	Pulse Clipper	C211	ECUX1H103ZF	Chip 0.01μF ±10% 50V
D43	TVS08V-100	Damper	C212	ECUX1H103ZF	Chip 0.01μF ±10% 50V
D44	MA152K	Rectifier	C215	ECUX1H390KC	Chip 39PF ±10% 50V
D45	MA152K	Rectifier	C301	ECUX1H103MD	Chip 0.01μF ±20% 50V
D46	TVSBB10	Rectifier	C302	ECUX1H153MD	Chip 0.015μF ±20% 50V
D47	TVSRD4R7EB	Zener	C303	ECEA1HK010EJ	Electrolytic 1μF 50V
D75	TVSRD3R3EB	Zener	C304	ECSF1VM334C	Tantalum 0.33μF 35V
D76	MA151K	Switching	C305	ECSF1AM475C	Tantalum 4.7μF 10V
D77	TVSRD7R5JB	Zener	C306	ECSF1AM225C	Tantalum 2.2μF 10V
D91	MA151K	Switching	C307	ECUX1H102MD	Chip 1,000PF ±20% 40V
D92	MA151WK	Switching	C308	ECEA0JK330	Electrolytic 33μF 6.3V
<b>COILS &amp; TRANSFORMERS</b>			C309	ECEA0JV471W	Electrolytic 470μF 6.3V
L101	TLI801358	V-IF Trans.	C311	ECEA1AS101SW	Electrolytic 100μF 10V
L131	TLQ391K146C	Peaking Coil	C312	ECEA0JV471W	Electrolytic 470μF 6.3V
L132	TLQ391K146C	Peaking Coil	C361	ECUX1H103MD	Chip 0.01μF ±20% 50V
L202	TLQ100K146	Peaking Coil	C362	ECUX1H181K	Chip 180PF ±10% 50V
L301	TLQ391K146C	Peaking Coil	C401	ECUX1H333ZF	Chip 0.033μF ±10% 50V
T401	TLF80957	Flyback Trans.	C402	ECEA1HK010EJ	Electrolytic 1μF 50V
<b>CAPACITORS</b>			C403	ECUX1H101K	Chip 100PF ±10% 50V
C91	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C404	ECUX1H472MD	Chip 4,700PF ±20% 50V
C92	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C405	ECUX1H153MD	Chip 0.015μF ±20% 50V
C93	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C407	ECUX1H153MD	Chip 0.015μF ±20% 50V
C94	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C408	ECEA1CK100	Electrolytic 10μF 16V
C95	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C409	ECSZ10EF22N	Tantalum 22μF 10V
C96	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C410	ECUX1H153ZF	Chip 0.015μF ±10% 50V
C97	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C411	ECQK1103JZ	Polyester Polypropylene 0.01μF ±5% 100V
C98	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C413	ECEA1HK010EJ	Electrolytic 1μF 50V
C101	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C414	ECQM2103KZ	Polyester 0.01μF ±10% 200V
C102	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C415	ECUX1H102MD	Chip 1,000PF ±20% 50V
C103	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C416	ECUX1H333ZF	Chip 0.033μF ±10% 50V
C105	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C417	ECUX1H222MD	Chip 2200PF ±20% 50V
C106	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C440	ECUX1H333ZF	Chip 0.033μF ±10% 50V
C131	ECEA0JV471W	Electrolytic 470μF 6.3V	C441	ECKD2H391KB9	Ceramic 390PF ±10% 500V
C132	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C442	ECEA2AS3R3	Electrolytic 3.3μF 100V
C133	ECSZ10EF22N	Tantalum 22μF 10V	C443	ECKC3A182MD	Ceramic 1,800PF ±20% 1KV
C134	ECUX1H103ZF	Chip 0.01μF ±10% 50V	C444	ECEA1CK100	Electrolytic 10μF 16V
C140	ECEA1Ek4R7EJ	Electrolytic 4.7μF 25V	C445	ECUX1H333ZF	Chip 0.033μF ±10% 50V
C141	ECEA0JK101	Electrolytic 100μF 6.3V	C501	ECSF1VM473	Tantalum 0.047μF 35V
C142	ECUX1H102MD	Chip 1,000PF ±20% 50V	C502	ECUX1H152MD	Chip 1500PF ±20% 50V
			C503	ECEA0JV221W	Electrolytic 220μF 6.3V
			C504	ECEA0JK220EJ	Electrolytic 22μF 6.3V
			C505	ECEA1CK100	Electrolytic 10μF 16V

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C506	ECEA1CK100	Electrolytic 10 $\mu$ F 16V	R308	RRD18XK682	Chip 6.8K $\Omega$ $\pm$ 10% 1/8V
C507	ECEA0JK470	Electrolytic 47 $\mu$ F 6.3V	R309	RRD18XK472	Chip 4.7K $\Omega$ $\pm$ 10% 1/8V
C508	ECSF1VM473	Tantalum 0.047 $\mu$ F 35V	R310	RRD18XK2R7	Chip 2.7 $\Omega$ $\pm$ 10% 1/8V
C701	ECEA1CV101W	Electrolytic 100 $\mu$ F 16V	R313	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
C702	ECUX1H101K	Chip 100PF $\pm$ 10% 50V	R360	RRD18XK821	Chip 820 $\Omega$ $\pm$ 10% 1/8V
C703	ECEA0JV471W	Electrolytic 470 $\mu$ F 6.3V			
C704	ECEA1EK4R7EJ	Electrolytic 4.7 $\mu$ F 25V	R361	RRD18XK563	Chip 56K $\Omega$ $\pm$ 10% 1/8V
C705	ECUX1H102MD	Chip 1000PF $\pm$ 20% 50V	R401	RRD18XK561	Chip 560 $\Omega$ $\pm$ 10% 1/8V
<b>RESISTORS</b>			R402	RRD18XK390	Chip 39 $\Omega$ $\pm$ 10% 1/8V
R91	RRD18XK682	Chip 6.8K $\Omega$ $\pm$ 10% 1/8W	R403	RRD18XK103	Chip 10K $\Omega$ $\pm$ 10% 1/8V
R92	RRD18XK102	Chip 1K $\Omega$ $\pm$ 10% 1/8W	R404	RRD18XK222	Chip 2.2K $\Omega$ $\pm$ 10% 1/8V
R93	RRD18XK274	Chip 270K $\Omega$ $\pm$ 10% 1/8W	R405	RRD18XK273	Chip 27K $\Omega$ $\pm$ 10% 1/8V
R94	RRD18XK223	Chip 22K $\Omega$ $\pm$ 10% 1/8W	R406	RRD18XK470	Chip 47 $\Omega$ $\pm$ 10% 1/8V
R95	RRD18XK822	Chip 8.2K $\Omega$ $\pm$ 10% 1/8W	R407	RRD18XK272	Chip 2.7K $\Omega$ $\pm$ 10% 1/8V
R96	RRD18XK105	Chip 1M $\Omega$ $\pm$ 10% 1/8W	R408	RRD18XK471	Chip 470 $\Omega$ $\pm$ 10% 1/8V
R97	RRD18XK103	Chip 10K $\Omega$ $\pm$ 10% 1/8W	R409	RRD18XK474	Chip 470K $\Omega$ $\pm$ 10% 1/8V
R98	RRD18XK103	Chip 10K $\Omega$ $\pm$ 10% 1/8W	R440	RRD18XK392	Chip 3.9K $\Omega$ $\pm$ 10% 1/8V
R101	RRD18XK560	Chip 56 $\Omega$ $\pm$ 10% 1/8W	R441	RRD18XK334	Chip 330K $\Omega$ $\pm$ 10% 1/8V
R111	RRD18XK182	Chip 1.8K $\Omega$ $\pm$ 10% 1/8W	R442	RRD18XK394	Chip 390K $\Omega$ $\pm$ 10% 1/8V
R141	RRD18XK104	Chip 100K $\Omega$ $\pm$ 10% 1/8W	R443	RRD18XK105	Chip 1M $\Omega$ $\pm$ 10% 1/8V
			R444	RRD18XK472	Chip 4.7K $\Omega$ $\pm$ 10% 1/8V
R142	RRD18XK103	Chip 10K $\Omega$ $\pm$ 10% 1/8W	R445	RRD18XK102	Chip 1K $\Omega$ $\pm$ 10% 1/8V
R143	RRD18XK153	Chip 15K $\Omega$ $\pm$ 10% 1/8W	R502	RRD18XK680	Chip 68 $\Omega$ $\pm$ 10% 1/8V
R144	RRD18XK102	Chip 1K $\Omega$ $\pm$ 10% 1/8W	R503	ERD25FJ390	Carbon 39 $\Omega$ $\pm$ 5% 1/4W
R145	RRD18XK331	Chip 330 $\Omega$ $\pm$ 10% 1/8W	R504	RRD18XK182	Chip 1.8K $\Omega$ $\pm$ 10% 1/8V
R180	RRD18XK122	Chip 1.2K $\Omega$ $\pm$ 10% 1/8W	R505	RRD18XK473	Chip 47K $\Omega$ $\pm$ 10% 1/8V
			R601	RRD18XK105	Chip 1M $\Omega$ $\pm$ 10% 1/8V
R181	RRD18XK183	Chip 18K $\Omega$ $\pm$ 10% 1/8W			
R182	RRD18XK224	Chip 220K $\Omega$ $\pm$ 10% 1/8W	R701	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R183	RRD18XK183	Chip 18K $\Omega$ $\pm$ 10% 1/8W	R702	RRD18XK682	Chip 6.8K $\Omega$ $\pm$ 10% 1/8V
R184	RRD18XK102	Chip 1K $\Omega$ $\pm$ 10% 1/8W	R703	RRD18XK472	Chip 4.7K $\Omega$ $\pm$ 10% 1/8V
R185	RRD18XK152	Chip 1.5K $\Omega$ $\pm$ 10% 1/8W	R704	RRD18XK471	Chip 470 $\Omega$ $\pm$ 10% 1/8V
			R705	RRD18XK472	Chip 4.7K $\Omega$ $\pm$ 10% 1/8V
R186	RRD18XK331	Chip 330 $\Omega$ $\pm$ 10% 1/8W			
R187	RRD18XK332	Chip 3.3K $\Omega$ $\pm$ 10% 1/8W	R706	RRD18XK681	Chip 680 $\Omega$ $\pm$ 10% 1/8V
R188	RRD18XK273	Chip 27K $\Omega$ $\pm$ 10% 1/8W	R707	RRD18XK390	Chip 39 $\Omega$ $\pm$ 10% 1/8V
R201	RRD18XK101	Chip 100 $\Omega$ $\pm$ 10% 1/8W	R708	ERD10TJ101	Carbon 100 $\Omega$ $\pm$ 5% 1/8W
R202	RRD18XK562	Chip 5.6K $\Omega$ $\pm$ 10% 1/8W	R710	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
			R711	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R203	RRD18XK562	Chip 5.6K $\Omega$ $\pm$ 10% 1/8W	R712	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R204	RRD18XK562	Chip 5.6K $\Omega$ $\pm$ 10% 1/8W			
			R713	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R206	RRD18XK123	Chip 12K $\Omega$ $\pm$ 10% 1/8W	R714	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R207	RRD18XK123	Chip 12K $\Omega$ $\pm$ 10% 1/8W	R715	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
			R716	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R208	RRD18XK123	Chip 12K $\Omega$ $\pm$ 10% 1/8W	R717	RRD18XK391	Chip 390 $\Omega$ $\pm$ 10% 1/8V
R212	RRD18XK272	Chip 2.7K $\Omega$ $\pm$ 10% 1/8W	<b>CERAPS</b>		
R213	RRD18XK330	Chip 33 $\Omega$ $\pm$ 10% 1/8W	CF21	EFCS4R5MSM	S-IF Input Filter
R301	RRD18XK153	Chip 15K $\Omega$ $\pm$ 10% 1/8W	CF22	EFCS5R5MSM	S-IF Input Filter
R302	RRD18XK183	Chip 18K $\Omega$ $\pm$ 10% 1/8W	CF23	EFCS6R0MSM	S-IF Input Filter
			CF25	EFCS4R5MCM	Discriminator
R303	RRD18XK683	Chip 68K $\Omega$ $\pm$ 10% 1/8W	CF26	EFCS5R5MCM	Discriminator
R304	RRD18XK184	Chip 180K $\Omega$ $\pm$ 10% 1/8W	CR27	EFCS6R0MCM	Discriminator
R305	RRD18XK153	Chip 15K $\Omega$ $\pm$ 10% 1/8W	<b>CONTROLS</b>		
R306	RRD18XK392	Chip 3.9K $\Omega$ $\pm$ 10% 1/8W	VR19	EVNKOBA00B53	RF AGC 5K $\Omega$ B
R307	RRD18XK332	Chip 3.3K $\Omega$ $\pm$ 10% 1/8W	VR31	EVLVOFA00B15	Vert. Hold 100K $\Omega$ B
			VR32	EVNA1AA00B54	Vert. Hight 50K $\Omega$ B
			VR41	EVNJ0BA00B13	Horiz. Freq. 1K $\Omega$ B
			VR62	EVJ7KA30923X	Contrast 2K $\Omega$ X

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
VR63	EVLV0FA00B55	Bright 500K $\Omega$ B	C1012	ECUX1H220KC	Chip 22PF $\pm 10\%$ 50V
VR71	EVNA6AA00B23	AVR 2K $\Omega$ B	C1013	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
VR92	EVNA1AA00B54	Sub Tuning 50K $\Omega$ B	C1014	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
VR93	EVNA1AA00B54	Sub Tuning 50K $\Omega$ B	C1015	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
VR94	EVNA1AA00B25	Sub Tuning 200K $\Omega$ B	C1050	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
VR95	EVNA1AA00B54	Sub Tuning 50K $\Omega$ B	C1051	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
<b>OTHER PARTS</b>			C1053	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
TH18	ERTD2ZHL333S	Thermistor	C1054	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
	TJS828290	DC. Socket	C1055	ECUX1H333ZF	Chip 0.033 $\mu$ F $\pm 20\%$ 50V
	TJS868420	2-P Mini. Connector Plug	C1056	ECEA1ES4R7	Electrolytic 4.7 $\mu$ F 25V
	TJS868430	3-P Mini. Connector Plug	C1057	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
	TJS868260	4-P Mini. Connector Plug	C1058	ECEA1CK100	Electrolytic 10 $\mu$ F 16V
SW1	TSE80330	TV/FM/AM Selector Switch	C1059	ECUX1H472MD	Chip 0.0047 $\mu$ F $\pm 20\%$ 50V
SW2	TSE80329	A/E/G Formula Selector Switch	C1060	ECEA1CS100	Electrolytic 10 $\mu$ F 16V
SW4	TSE80329	u/v Selector Switch	C1061	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
	TJC80337	Battery Terminal	C1101	ECUX1H100KC	Chip 10PF $\pm 10\%$ 50V
	TXAJT5P060	5-P Mini. Connector Ass'y	C1102	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
<b>TNP82983-21</b>			C1103	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
<b>I.C.</b>			C1104	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
IC101	AN7213	FM. Front End	C1105	ECUX1H050DC	Chip 5PF $\pm 0.5$ PF 50V
IC102	AN7218	AM RF, IF, /FM IF	C1131	ECEA1CK100	Electrolytic 10 $\mu$ F 16V
<b>TRANSISTORS</b>			C1132	ECEA1CK100	Electrolytic 10 $\mu$ F 16V
Q101	2SC1009	FM IF. AMP. (F3, F4)	C1133	ECEA1CK100	Electrolytic 10 $\mu$ F 16V
Q110	2SK160	AM RF AMP. (K6, K5)	C1134	ECEA1CK100	Electrolytic 10 $\mu$ F 16V
<b>DIODES</b>			C1135	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
D80	MA57	Switching	C1136	ECUX1H102MD	Chip 1000pF $\pm 20\%$ 50V
D81	TVS1SV80	Switching	C1137	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V
D82	MA57	Switching	C1138	ECSF35ER1	Tantalum 0.1 $\mu$ F 35V
D102	OA91	FM Det.	C1139	ECUX1H333ZF	Chip 0.033 $\mu$ F $\pm 20\%$ 50V
D103	OA91	FM Det.			
D106	MA151WK	Switching	<b>RESISTORS</b>		
D110	OA91	AM Det.	R81	RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W
<b>COILS &amp; TRANSFORMERS</b>			R82	RRD18XK222	Chip 2.2K $\Omega$ $\pm 10\%$ 1/8W
L80	TLR809493C	RF Choke Coil	R83	RRD18XK474	Chip 470K $\Omega$ $\pm 10\%$ 1/8W
L81	TLR80127	Loading Coil	R84	RRD18XK474	Chip 470K $\Omega$ $\pm 10\%$ 1/8W
L1003	TLR809455C	Loading Coil	R85	RRD18XK474	Chip 470K $\Omega$ $\pm 10\%$ 1/8W
L1004	TLR809445C	FM RF Coil	R86	RRD18XK474	Chip 470K $\Omega$ $\pm 10\%$ 1/8W
L1005	TLR809454C	FM OSC Coil	R1001	RRD18XK470	Chip 47 $\Omega$ $\pm 10\%$ 1/8W
L1006	EIF7S803A	FM IF Trans.	R1002	RRD18XK680	Chip 68 $\Omega$ $\pm 10\%$ 1/8W
L1007	EIF7S804D	FM Det. Coil	R1003	RRD18XK101	Chip 100 $\Omega$ $\pm 10\%$ 1/8W
L1008	EIF7S801E	FM Det. Coil	R1004	RRD18XK393	Chip 39K $\Omega$ $\pm 10\%$ 1/8W
L1101	ELL7S801A	AM Osc Coil	R1005	RRD18XK470	Chip 47 $\Omega$ $\pm 10\%$ 1/8W
L1110	EIA7S802A	AM IF TRANS.	R1050	RRD18XK334	Chip 330K $\Omega$ $\pm 10\%$ 1/8W
L1111	EIA7S808D	AM Det. Coil	R1051	RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W
<b>CAPACITORS</b>			R1052	RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W
C80	ECUX1H102MD	Chip 1,000PF $\pm 20\%$ 50V	R1053	RRD18XK331	Chip 330 $\Omega$ $\pm 10\%$ 1/8W
C81	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V	R1054	RRD18XK681	Chip 680 $\Omega$ $\pm 10\%$ 1/8W
C1001	PVCLC416-1	Poly. Variable	R1055	RRD18XK331	Chip 330 $\Omega$ $\pm 10\%$ 1/8W
C1004	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V	R1056	RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W
C1005	ECUX1H333ZF	Chip 0.033 $\mu$ F $\pm 20\%$ 50V	R1057	RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W
C1006	ECUX1H180KC	Chip 18PF $\pm 10\%$ 50V	R1058	RRD18XK103	Chip 10K $\Omega$ $\pm 10\%$ 1/8W
C1007	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V	R1059	RRD18XK153	Chip 15K $\Omega$ $\pm 10\%$ 1/8W
C1008	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V	R1060	RRD18XK333	Chip 33K $\Omega$ $\pm 10\%$ 1/8W
C1009	ECUX1H103ZF	Chip 0.01 $\mu$ F $\pm 20\%$ 50V	R1061	RRD18XK470	Chip 47 $\Omega$ $\pm 10\%$ 1/8W
C1010	ECUX1H050DC	Chip 5PF $\pm 0.5$ PF 50V	R1062	RRD18XK222	Chip 2.2K $\Omega$ $\pm 10\%$ 1/8W
C1011	ECUX1H150KC	Chip 15PF $\pm 10\%$ 50V	R1100	RRD18XK101	Chip 100 $\Omega$ $\pm 10\%$ 1/8W
			R1101	RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
R1102	○ RRD18XK684	Chip 680K $\Omega$ $\pm 10\%$ 1/8W	<b>OTHER PARTS</b>  Z101 RXABPMB1 FM BPF CF101 TFCS10R7M-2 10.7MHz Filter CF102 TFCS10R7M-2 10.7MHz Filter CF110 RVFCFM2455E Filter TJS828300 Ext. Antenna Socket  TJS868550 5-P L-Type Mini. Connector Plug		
R1130	○ RRD18XK102	Chip 1K $\Omega$ $\pm 10\%$ 1/8W			
R1131	○ RRD18XK103	Chip 10K $\Omega$ $\pm 10\%$ 1/8W			
R1132	○ RRD18XK473	Chip 47K $\Omega$ $\pm 10\%$ 1/8W			
R1133	○ RRD18XK103	Chip 10K $\Omega$ $\pm 10\%$ 1/8W			
R1134	○ RRD18XK101	Chip 100 $\Omega$ $\pm 10\%$ 1/8W			
R1135	○ RRD18XK103	Chip 10K $\Omega$ $\pm 10\%$ 1/8W			
R1136	○ RRD18XK183	Chip 18K $\Omega$ $\pm 10\%$ 1/8W			
R1137	○ RRD18XK333	Chip 33K $\Omega$ $\pm 10\%$ 1/8W			
R1138	○ RRD18XK471	Chip 470 $\Omega$ $\pm 10\%$ 1/8W			
J1011	○ RRD18XK000	Chip 0 $\Omega$			
J1012	○ RRD18XK000	Chip 0 $\Omega$			
J1013	○ RRD18XK000	Chip 0 $\Omega$			